Using On-line Monitoring
of Cyanobacteria in Source Water Treatment

YSI Environmental
Application Note A618

Members of the University of New South Wales (UNSW) bioMASS Lab, under the auspices of the Australian Research Council (ARC), have recently started executing the "Linkage Project" – a coordinated effort to better monitor cyanobacteria in important local watersheds.

On-line information gathered from this project will be used to predict coagulant doses and powdered activated carbon application in the water treatment process. UNSW has collaborated with Xylem Analytics Australia and YSI, among many others, to bring the full power of next-level monitoring equipment into play.

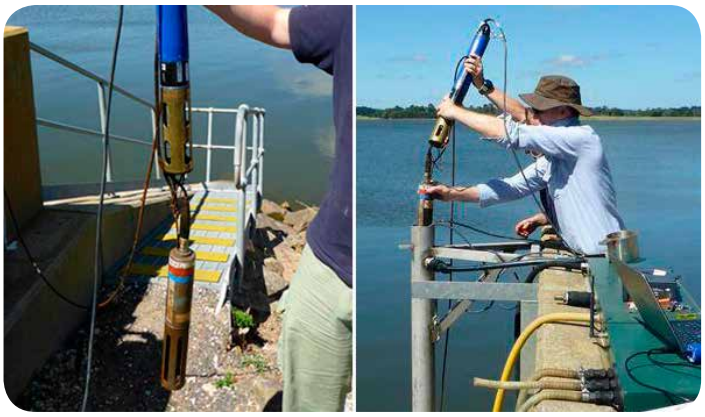
EXO2 Sondes and Legacy 6600-V2 Sondes in pre-deployment quality testing.

Protecting source water resources is important for more than just human well-being.

Dr. Arash Zamyadi with Florence Choo, University of New South Wales, conducting pre-deployment testing.

PROJECT SUMMARY

Cyanobacteria, more commonly known as blue-green algae, can impact water quality by releasing toxins that can be harmful to life and impart unpleasant taste and odor to the water. The project supports the water industry in managing these risks by providing a rapid, on-line tool to assist in their early detection and removal during water treatment. The project collaborators aim to ensure water quality guidelines are met during cyanobacteria blooms by developing a protocol for the application of an on-line analyzer to obtain real-time information. This information will direct the application of substances that will combat the blooms.



A YSI 6820 suspended beneath an EXO2.
Both feed into a CR1000 datalogger which transmits data to an online SCA database.

To meet their goals the UNSW team is deploying multiple EXO2 sondes for both spot sampling and continuous monitoring. Outfitted with YSI's TAL (Total Algae) Sensor the YSI sondes will sample for cyanobacteria among other parameters. The system automatically uploads water quality data to an on-line database where the team can review a live stream of information to help inform their models. By going to an on-line platform there's no need to wait for regular trips to the field to start the work associated with data analysis.

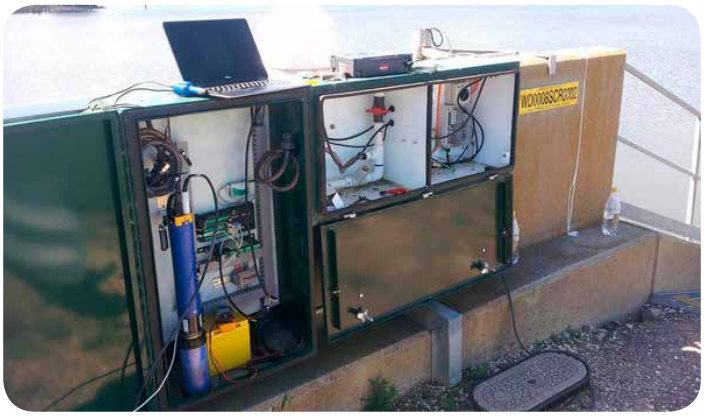
PROJECT OBJECTIVES

- The calibration of fluorescence probes for accurate cyanobacteria enumeration in a range of conditions
- The estimation and validation of cyanobacteria metabolites cell quotas and intra- and extra-partitioning for cultured and environmental cyanobacteria samples
- The application and validation of the probe for the 'real time' determination of cell numbers and extracellular metabolite concentration to control PAC dose
- The application and validation of the probe to assist in directing coagulant doses in the presence of cyanobacteria to achieve filtered water quality goals
- The determination of the feasibility of the application of the probes as an on-line tool at a full-scale plant

Xylem Analytics Australia and YSI Inc. are proud to be a part of this flagship project. We are very eager to see the success of the online monitoring system in conjunction with our sondes surveying for cyanobacteria levels.

To learn more about the project, partners, and members of the bioMASS Lab at UNSW please visit:
Linkage project public summary.

Or, reach out to them on facebook, and view recent project photos: bioMASS Lab Facebook Page



Housing system to protect UNSW's critical water monitoring investments and data.

Water sampling with an EXO2 at an intake site.

Water sampling with an EXO2 at the plant.

YSI, a Xylem Brand manufactures environmental monitoring instruments and systems. Formerly known as YSI, the group is a market leader with a reputation for high levels of accuracy and reliability.

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